18W CAR RADIO POWER AMPLIFIER—YD1028

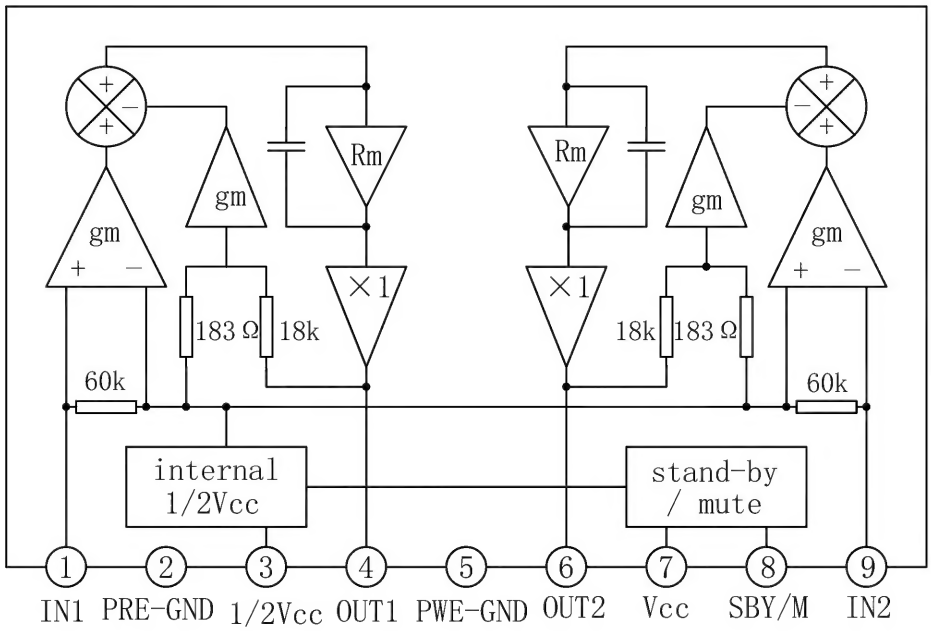
DESCRIPTION

The YD1028 is an integrated class-B dual output amplifier in a 9-lead single in-line (TO220Z9) plastic power package. The device is primarily developed for car radio applications.

FEATURES

*Requires very few external components for Bridge Tied Load (BTL),Stereo or BTL application;
*High output power, Fixed gain, Good ripple rejection;
* Identical inputs (inverting and non-inverting),Low offset voltage at output (important for BTL);
*Mute/stand-by switch, No switch-on/switch-off plop;
*Load dump protection, AC and DC short-circuit-safe to ground and Vcc, Thermally protected;
*Reverse polarity safe;
*Capability to handle high energy on outputs (Vcc=0V);
*Protected against electrostatic discharge.

BLOCK DIAGRAM



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ABSOLUTE MAXIMUM RATINGS (Tamb=25℃)

PARAMETER	SYMBOL	TEST CONDITIONS	VALUE	UNIT
Supply Voltage Operating	Vcc		18	V
Non-operating	Vcc		20	V
AC And DC Shot-circuit-safe Voltage	Vccsc		18	V
Reverse Polarity	Vccr		6	V
Non-repetitive Peak Output Current	I_{OSM}		4	A
Repetitive Peak Output Current	I_{ORM}		2.5	A
Total Power Dissipation	P_D	Infinite Heat Sink	20	W
		No Heat Sink	4.0	
Operating Temperature	Topr		-20～+75	℃
Storage Temperature	Tstg		-55～+150	℃

ELECTRICAL CHARACTERISTICS

DC CHARACTERISTICS

(Vcc=13.2V, Tamb=25℃, BTL, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage Range	Vcc		6.0	13.2	18.0	V
Total Quiescent Current	Iccq			40	60	mA
DC Output Voltage	Vo			6.2		V
DC Output Offset Voltage	|△V4-6|	Operating/Mute			250	mV
Switch-on Voltage Level	V_{ON}	Operating	8.5			V
Mute Condition	Vmute	Mute	3.3		6.4	V
Stand-by Condition	Vst-by	Stand-by			2.0	V
DC Current in Stand-by	Iccsb	V8≤2.0V			100	μA
Control Current in Stand-by	I8sb	V8≤2.0V		12	40	μA

AC CHARACTERISTICS

(Vcc=13.2V, R_L=4Ω, f=1KHz, Tamb=25℃; BTL, unless otherwise specified)

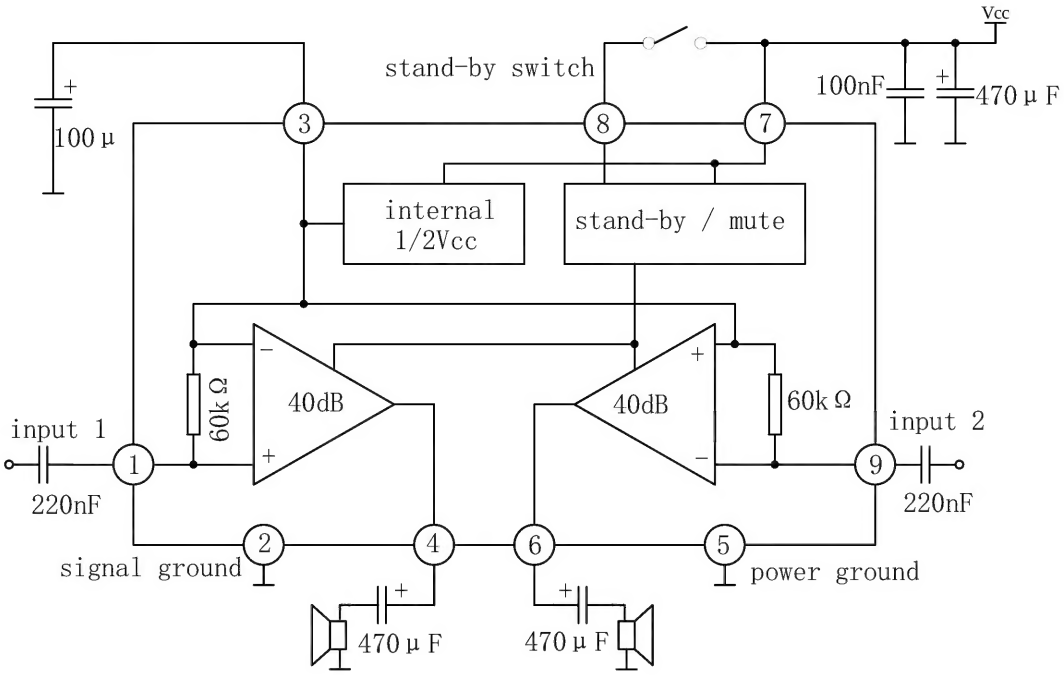
PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Output Power	Po	THD=1.0%		12	13		W
		THD=10%		16	18		W
Closed Loop Voltage Gain	Gv			45	46	47	dB
Total Harmonic Distortion	THD	Po =1W			0.1		%
Output Signal In Mute Position	Vo	Vin=1V(max.); f=20 Hz to 15 kHz				40	mV
Low Frequency Roll-off	f_L	-3dB			45		Hz
High Frequency Roll-off	f_H	-3dB		20			kHz
Supply Voltage Ripple Rejection	RR	ON，Vr=2Vp-p，Rg=0，fr=100Hz		34			dB
		ON，Vr=2Vp-p，Rg=0，fr=1kHz～10kHz		48			dB
		Mute	Vr=2Vp-p，Rg=0，fr=100Hz, 1kHz～10kHz	48			dB
		Stand-by		80			dB
Input Impedance	|Zi|			25	30	38	kΩ
Noise Output Voltage (RMS value)	Vno	ON，Rg=0Ω，BPF=20Hz～20kHz			200		μV
		ON， Rs=10kΩ BPF=20Hz～20kHz			350	700	μV
		Mute，BPF=20Hz～20kHz			180		μV

AC CHARACTERISTICS

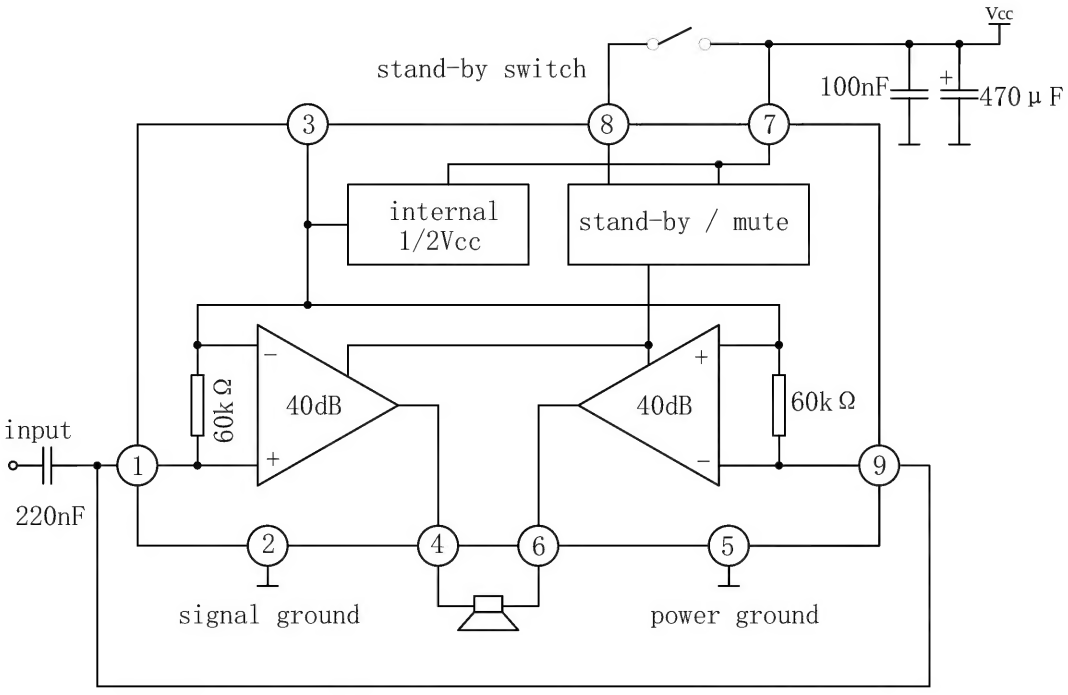
Vcc=13.2V, R_L=2Ω, f=1KHz; Tamb=25℃, stereo, unless otherwise specified

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Power	Po	THD=1.0%		8.0		W
		THD=10%		9.0		W
Output Power **(Vcc=14.4V)**	Po	R_L=4Ω， THD=1.0%	4.8	5.0		W
		R_L=4Ω， THD=10%	5.8	6.2		W
Closed Loop Voltage Gain	Gv		39	40	41	dB
Total Harmonic Distortion	THD	Po =1W		0.1		%
Output Signal In Mute Position	Vo	Vin=1V(max.); f=20 Hz to 15 kHz			20	mV
Low Frequency Roll-off	f_L	-3dB		45		Hz
High Frequency Roll-off	f_H	-3dB	20			kHz
Supply Voltage Ripple Rejection	RR	ON，Vr=2Vp-p，Rg=0，fr=100Hz	40			dB
		ON，Vr=2Vp-p，Rg=0，fr=1kHz～10kHz	45			dB
		Mute；Vr=2Vp-p，Rg=0，fr=100Hz, 1kHz～10kHz	45			dB
		Stand-by；Vr=2Vp-p，Rg=0，fr=100Hz, 1kHz～10kHz	80			dB
Input Impedance	Zi		50	60	75	kΩ
Noise Output Voltage (RMS value)	Vno	ON，Rg=0Ω，BPF=20Hz～20kHz		150	500	μV
		ON， Rs=10kΩ BPF=20Hz～20kHz		250		μV
		Mute，BPF=20Hz～20kHz		120		μV
Channel Separation	α	Rs=10kΩ	40			dB
Channel Unbalance	|△Gv|			0.1	1	dB

APPLICATION CIRCUIT



Stereo application circuit diagram



BTL application circuit diagram

OUTLINE DRAWING

Unit: inch / mm